REMARKS/ARGUMENT

Claims 15-22, and 25-27 are pending after entry of the presently Proposed Amendment. Claims 15, 20-21, and 25-26 are herein proposed to be amended. Claim 15 is amended to positively recite that the method is a computational method. Claim 20 is amended to correct a minor error of form. Claim 21 is amended to positively recite that the method is a computational method. Additionally, features formerly recited in claim 23 have been incorporated into claim 21, and claim 23 is canceled. Claim 25 is amended to positively recite that the method is a computational method, that the clustering is based on the ranking, and to correct an antecedent basis error. Claim 26 is amended to positively recite that the method is a computational method, to positively recite that the position closer to "j" is in the affinity chart, and to correct a minor grammatical error. No new matter has been introduced.

Applicant is filing this response within two months of the date of mailing of the Final Office Action in conformance with MPEP Section 714.13. A response in accordance with this section is kindly requested.

Applicant further submits that the presently proposed Amendment cancels claims and clarifies claimed features. Applicant therefore respectfully requests that the Proposed Amendment be entered. At the very least, the presently Proposed Amendment reduces and clarifies issues for appeal, should appeal be warranted, and should therefore be entered.

Rejections under 35 USC §102

Claims 1-27 were rejected under 35 USC §102(e) as being anticipated by Rajaraman et al. (U.S. Patent No. 6,366,910). Applicant respectfully traverses this rejection and requests reconsideration.

In order for a reference to anticipate a claim, each and every element as set forth in the claim must be found in the reference, either expressly or inherently described. MPEP 2131. Applicant respectfully submits that Rajaraman et al. do not anticipate Applicant's claims 15-22 and 25-27.

Applicant has canceled claims 1-14, 23, and 24.

Rajaraman et al. teaches a method and system for querying hierarchically classified data. In other words, Rajaraman et al. teach information retrieval from a known, structured,

source. The system first receives a query request, and then identifies classifications, ***already existing in the hierarchically structured database***, that may satisfy the received query request.

In independent claim 15, as proposed to be amended herein, Applicant claims a computational method for providing visualization of items from data sets. The method includes determining, for a plurality of items from said data set, a set of properties. The set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. The method then applies local rankings of the relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates. The method thereby ranks the affinity of each item j to item sets i and k. Next, the method provides for generating a visualization by presenting results separately for each item in a data set, and by adjusting the presentation to avoid information overlap and overload. Finally, the method includes providing a separate presentation for each item of the data set by generating an affinity chart for each item j in the data set. The method thereby displays items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j.

According to the Office, claim 15 encompasses the same scope of invention as that of claims 1, 8, and 13. Although claims 1, 8, and 13 are canceled, Applicant respectfully disagrees, and points out that none of former claims 1, 8, or 13 recited features including, among other features, determining, for a plurality of items from said data set, a set of properties in which the set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. None of former claims 1, 8, or 13 recited the applying of local rankings of the relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates. The method thereby ranks the affinity of each item j to item sets i and k.

Applicant further submits that Rajaraman et al. do not teach a computational method of providing a visualization of items from data sets, do not teach a set of properties in which the set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items, and do not teach the applying

of local rankings of the relationships between terms by ranking items i that relate to each item j, and ranking all items k to which item j relates, and therefore does not teach the ranking of the affinity of each item j to item sets i and k.

As recited in claim 15, as proposed to be amended herein, Applicant claims a computational method that visualizes items from data sets, and in the providing of the visualization, determines a set of properties for a plurality of items from the data sets. In so doing, the presently claimed computational method provides a ranking of the affinity of each item j to item sets i and k. Nothing in the reference teaches or suggests this. The reference, when providing any sort of ranking, determines from a set of structured hierarchical data, those items most closely related to a search term or query. The items in the data set are compared to the search term or query. The data set is already structured, and so no clustering of data is computed, and since the structure of the data is *provided*, no relationships between items are computed or determined. The Office points out that Figure 4 of the reference illustrates relationships between items, but the Applicant respectfully disagrees. Figure 4 illustrates a hierarchical structure of items *as provided* (again, see the abstract of Rajaraman et al. in which it is recited that a method and system is disclosed for querying hierarchically classified data), and so no relationships are calculated or determined. Moreover, the hierarchical structure as illustrated in Figure 4 shows relationships between the items and the search term or query, but does not show relationships between the terms themselves, much less any value of relationships applied between subsets of items. In other words, while a relationship may exist between "Tops" and the search term in apparel, the reference does not teach a relationship between "Tops" and "Tee," and does not put, assign, or determine a value to a relationship between "Tops" and "Tee." The reference, therefore, fails to teach each and every feature as claimed by Applicant.

Applicant further points out that the reference not only fails to teach a set of properties which includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items, but the reference also fails to teach the application of ***local rankings*** of the relationships ***between*** terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates. Rajaraman et al. teach the strength of a match between a search term or query and data items in hierarchically

classified data. The ranking is between the search term and the data item or data class, sub-class, etc., and no disclosure or suggestion of computing or determining relationships or values assigned to relationships between subsets of data items is provided or suggested. The response from the Office that in Rajaraman et al. "The score provides an indication of how closely the terms of the entry matches the search criteria" further supports the Applicant's position.

Applicant's independent claim 19 recites a method for providing visualization of data sets containing a large number of items from said data sets. The method includes employing continuous curves including spiral segmentation in order to connect items relating to a primary item at different intensity levels. The visualization is adjusted to avoid information overlap and overload, and the items related to said primary item are grouped by strength of affinity. The method further includes providing an affinity chart, and spacing each related item individually with each item placed in an on-overlapping position. Items are presented with large numbers of related items with multiple affinity charts, and in the case of multiple affinity charts, a first affinity chart is provided to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strongly related items. The method then includes using curves to represent a relationship of items related to a particular item positioned at a starting point for the curve, with distance along the curve representing a strength of affinity to the item at the starting point of the curve. Finally, the method includes selectively employing color and shading gradations and curve thickness gradations are to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other.

According to the Office, claim 19 encompasses the same scope of invention as that of claims 1, 5-8, 11, 13, and 15. Applicant respectfully disagrees, but has been provided no supporting citation in the reference with which to pose an argument. The very first element of Applicant's claim 19 recites employing continuous curves including spiral segmentation in order to connect items relating to a primary item at different intensity levels. None of claims 1, 5-8, 11, 13, or 15 recited this feature. The reference does not teach or suggest this feature. In order for a reference to anticipate a claim, each and every element as set forth in the claim

must be found in the reference, either expressly or inherently described. Rajaraman therefore does not anticipate Applicant's claim 19.

Independent claim 20 recites a method for providing visualization of arbitrarily large data sets using low and local computational resources. The method includes determining, for at least a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. Then, at least one primary item is determined for the visualization. The method then includes applying local rankings of the relationships between terms, by ranking a first relational set of items that relate to the primary item, and ranking a second relational set of items to which the primary item relates, thereby ranking an affinity to each primary item to the first relational set of items and to the second relational set of items. A visualization is generated by presenting results separately for each item in a predetermined data set and adjusting the presentation to avoid information overlap and overload. The method then includes providing separate presentation for each item of the data set by generating an affinity chart for each primary item in the data set, thereby displaying items closely related to a selected primary item, with the primary item placed prominently in the affinity chart, and placing items which are more strongly related to the primary items closer to the primary item. The method includes expressing closeness along curves or shaped segments, connected or emanating from the primary item's position. The expression of closeness includes at least partially straight shaped segments. Continuous curves including spiral segments are employed in order to connect items relating to a primary item at different intensity levels. The method further includes adjusting the visualization to avoid information overlap and overload. The items related to the primary item are grouped by strength of affinity. Further provided is providing an affinity chart, and spacing each related item individually with each item placed in a non-overlapping position, and presenting items with large numbers of related items with multiple affinity charts, and in the case of multiple affinity charts, providing a first affinity chart to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strongly related items. The method further provides for using curves to represent a relationship of items related to a particular item positioned at a starting point for the curve,

with distance along the curve representing a strength of an affinity to the item at the starting point of the curve. Finally, the method includes selectively employing color and shading gradations and curve thickness gradations are to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other.

According to the Office, claim 20 encompasses the same scope of invention as that of claims 15 and 18. Again, Applicant respectfully disagrees, but re-asserts the argument presented above in reference to claims 15 and 18. Applicant further points out that, in order for a reference to anticipate a claim, each and every element as set forth in the claim must be found in the reference, either expressly or inherently described. The elements, expressing closeness along curves or shaped segments, connected or emanating from the primary item's position, and said expression of closeness including at least partially straight shaped segments are not recited in claims 15 or 18, nor in former claims 1, 5-8, 11, or 18 which were cited in the rejection of claim 18. The reference does not teach the elements of expressing closeness along curves or shaped segments, connected or emanating from the primary item's position, said expression of closeness including at least partially straight shaped segments, and therefore the reference does not anticipate Applicant's claim 20.

Applicant's independent claim 21 recites a computational method for providing visualization of large interrelated data sets. The method includes determining a relationship strength of related items in a data set. For each item in the data set, the method includes ranking related items based on the relationship strength and clustering related items based on the ranking. The method then includes computing a number of affinity charts per item, and establishing clusters of related items. The steps of ranking related items based on the relationship strength and computing the affinity charts are repeated until a desired information structure is achieved. The method then provides for positioning a principal node prominently in the affinity chart, and generating entries in the affinity chart emanating from the principal node for each of said clusters of related items. The generating of entries in the affinity chart further includes populating a list of related items.

In independent claim 21, the Office relies on previous rejections of claims 1, 5-8, 11, 13, and 15, without additional support or citation. Applicant therefore re-asserts the previously submitted argument. Independent claim 21 is herein proposed to be amended to

recite a *computational method*. Additionally, Applicant submits that the Office has rejected the element of clustering based on the hierarchical structure of data that is *provided and not computed or determined* in Rajaraman et al. In independent claim 21, Applicant has claimed clustering related items based on said ranking. Assuming Rajaraman et al. teach clustering based on the hierarchical structure of the data that is provided, this is not clustering related items based on said ranking. Rajaraman et al. therefore do not teach yet another feature as claimed by the Applicant, and do not anticipate Applicant's independent claim 21.

Applicant's independent claim 25 recites an affinity server for computationally structuring information for use in visualization of a large interrelated data set. The affinity server includes means for ranking related objects based upon relationship strength, means for clustering related objects based on said ranking, and means for computing a number of affinity charts per object. The Office cites the supporting citations for rejecting claim 1, now canceled. Applicant respectfully points out that claim 25, as proposed to be amended, recites computationally structuring the information. In the reference, no computation of structure is disclosed, the hierarchical structure is provided. Further, Applicant has amended claim 25 to recite that the clustering of related objects is based on the ranking. As described above, this feature also is not taught by the reference, and therefore the reference fails to teach each and every feature as claimed by Applicant, and therefore does not anticipate claim 25.

Both independent claims 26 and 27 were rejected using the rationale of the rejection of claim 15. Applicant has proved additional argument, at length, in support of independent claim 15, and re-asserts that argument as applicable to claims 26 and 27. Applicant has further proposed to amend claim 26 to positively recite that the computer program instructions compute as well as provide the visualization of items from data sets. As described above, Applicant has claimed active manipulation (computation) of data and items of data sets to determine relationships, assign value, and provide visualization of data sets. The reference, on the other hand, simply queries data that is provided as hierarchically classified.

For at least the above reasons, Applicant respectfully submits that Rajaraman et al. do not anticipate independent claims 15, 19, 20, 21, 25, 26, and 27, as proposed to be amended, and the claims are each patentable under 35 USC §102(e). Each dependent claim, depending from one of claims 15, 19, 20, 21, 25, 26, and 27, is likewise patentable. Applicant therefore respectfully requests reconsideration of the final rejection of claims 15-22 and 25-27, assuming entry of this proposed amendment, under 35 USC §102(e) as anticipated by Rajaraman et al.

In view of the foregoing, Applicants respectfully submit that claims 15-22 and 25-27, as herein proposed to be amended, are in condition for allowance. Accordingly, a Notice of Allowance is respectfully requested. If Examiner has any questions concerning the present amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6900, ext. 6905. If any additional fees are due in connection with filing this amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. ROXIP277).

Respectfully submitted,
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